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## NOTICE OF ALLOWANCE AND FEE(S) DUE

28112 7590 05/05/2006

GEORGE O. SAILE & ASSOCIATES  
28 DAVIS AVENUE  
POUGHKEEPSIE, NY 12603

EXAMINER

CASTRO, ANGEL A

ART UNIT

PAPER NUMBER

2627

DATE MAILED: 05/05/2006

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/513,873	02/28/2000	Min Li	HT99-024	9144

TITLE OF INVENTION: SHIELD STRUCTURE DESIGN TO IMPROVE THE STABILITY OF AN MR HEAD

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1400	\$0	\$1400	08/07/2006

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

### HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

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B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER:** Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

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Complete and send this form, together with applicable fee(s), to: **Mail** Mail Stop ISSUE FEE  
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**INSTRUCTIONS:** This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

28112      7590      05/05/2006

**GEORGE O. SAILE & ASSOCIATES**  
**28 DAVIS AVENUE**  
**POUGHKEEPSIE, NY 12603**

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I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

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nonprovisional	NO	\$1400	\$0	\$1400	08/07/2006

EXAMINER	ART UNIT	CLASS-SUBCLASS
CASTRO, ANGEL A	2627	360-319000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).	2. For printing on the patent front page, list (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
<input type="checkbox"/> Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.  <input type="checkbox"/> "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.	1 _____  2 _____  3 _____

### 3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

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Please check the appropriate assignee category or categories (will not be printed on the patent):  Individual  Corporation or other private group entity  Government

#### 4a. The following fee(s) are enclosed:

- Issue Fee
- Publication Fee (No small entity discount permitted)
- Advance Order - # of Copies \_\_\_\_\_

#### 4b. Payment of Fee(s):

- A check in the amount of the fee(s) is enclosed.
- Payment by credit card. Form PTO-2038 is attached.
- The Director is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

#### 5. Change in Entity Status (from status indicated above)

- a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.
- b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

The Director of the USPTO is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

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Date \_\_\_\_\_

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Registration No. \_\_\_\_\_

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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## Determination of Patent Term Extension under 35 U.S.C. 154 (b)

(application filed after June 7, 1995 but prior to May 29, 2000)

The Patent Term Extension is 0 day(s). Any patent to issue from the above-identified application will include an indication of the 0 day extension on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Extension is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/513,873	LI ET AL.	
	Examiner	Art Unit	
	Angel A. Castro	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1.  This communication is responsive to \_\_\_\_\_.
2.  The allowed claim(s) is/are 7, 20, 32, 44, 58, 70, 83 and 95, renumbered consecutively as allowed claims 1-8.
3.  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a)  All
  - b)  Some\*
  - c)  None
 of the:
  1.  Certified copies of the priority documents have been received.
  2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3.  Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4.  A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5.  CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a)  including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1)  hereto or 2)  to Paper No./Mail Date \_\_\_\_\_.
  - (b)  including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date 3.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6.  DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

#### Attachment(s)

1.  Notice of References Cited (PTO-892)
2.  Notice of Draftsperson's Patent Drawing Review (PTO-948)
3.  Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4.  Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5.  Notice of Informal Patent Application (PTO-152)
6.  Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_.
7.  Examiner's Amendment/Comment
8.  Examiner's Statement of Reasons for Allowance
9.  Other \_\_\_\_\_.

**DETAILED ACTION**

1. Interference No. 105,294 has been terminated by a decision unfavorable to applicant. *Ex parte* prosecution is resumed.

**EXAMINER'S AMENDMENT**

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

**IN THE CLAIMS:**

Claim 7 now read as follows:

--A method for fabricating a laminated magnetic shield for an MR read head comprising:  
    providing a substrate;  
    forming on said substrate a layer of Al<sub>2</sub>O<sub>3</sub> of thickness between 0.5 microns and 10.0 microns;  
    forming on said Al<sub>2</sub>O<sub>3</sub> layer a first layer of ferromagnetic material;  
    forming on said first layer of ferromagnetic material a layer of ruthenium;  
    forming on said layer of ruthenium a second layer of ferromagnetic material;

forming on said second layer of ferromagnetic material a dielectric layer;  
wherein the layer of ruthenium if of thickness between 2.0 angstrom and 4.0  
angstrom.--

Claim 20 now read as follows:

--A method for fabricating a laminated magnetic shield for an MR read head comprising:  
providing a substrate;  
forming on said substrate a first layer of ferromagnetic material;  
forming on said first layer of ferromagnetic material a first layer of CoFe;  
forming on said first layer of CoFe a layer of ruthenium (Ru);  
forming on said layer of ruthenium a second layer of CoFe;  
forming on said second layer of CoFe a second layer of ferromagnetic material;  
forming on said second layer of ferromagnetic material a dielectric layer;  
wherein the layer of ruthenium if of thickness between 2.0 angstrom and 4.0  
angstrom.--

Claim 32 now read as follows:

--A laminated magnetic shield for an MR read head comprising:  
a substrate;  
a layer of Al<sub>2</sub>O<sub>3</sub> of thickness between 0.5 microns and 10.0 microns formed on  
said substrate;  
a first layer of ferromagnetic material formed on said layer of Al<sub>2</sub>O<sub>3</sub>;

a layer of ruthenium formed on said first layer of ferromagnetic material;  
a second layer of ferromagnetic material formed on said layer of ruthenium;  
a dielectric layer formed on said second layer of ferromagnetic material;  
wherein the layer of ruthenium if of thickness between 2.0 angstrom and 4.0  
angstrom.--

Claim 44 now read as follows:

--A laminated magnetic shield for an MR read head comprising:  
a substrate;  
a first layer of ferromagnetic material formed on said substrate;  
a first layer of CoFe formed on said first layer of ferromagnetic material;  
a layer of ruthenium formed on said first layer of CoFe;  
a second layer of CoFe formed on said layer of ruthenium;  
a second layer of ferromagnetic material formed on said second layer of CoFe;  
a dielectric layer formed on said second layer of ferromagnetic material;  
wherein the layer of ruthenium if of thickness between 2.0 angstrom and 4.0  
angstrom.--

Claim 58 now read as follows:

--A magnetoresistive read head with laminated magnetic shields comprising:  
a first laminated magnetic shield;  
a magnetoresistive sensor element formed on said first laminated magnetic shield;

a second laminated magnetic shield formed on said magnetoresistive sensor;

wherein the first laminated magnetic shield comprises:

a substrate;

a layer of Al<sub>2</sub>O<sub>3</sub> of thickness between 0.5 microns and 10.0 microns formed on said substrate;

a first layer of ferromagnetic material formed on said layer of Al<sub>2</sub>O<sub>3</sub>;

a layer of ruthenium formed on said first layer of ferromagnetic material;

a second layer of ferromagnetic material formed on said layer of ruthenium;

a dielectric layer formed on said second layer of ferromagnetic material;

wherein the layer of ruthenium if of thickness between 2.0 angstrom and 4.0 angstrom.--

Claim 70 now read as follows:

-- A magnetoresistive read head with laminated magnetic shields comprising:

a first laminated magnetic shield;

a magnetoresistive sensor element formed on said first laminated magnetic shield;

a second laminated magnetic shield formed on said magnetoresistive sensor element;

wherein the first laminated magnetic shield comprises:

a substrate;

a first layer of ferromagnetic material formed on said substrate;

a first layer of CoFe formed on said first layer of ferromagnetic material;

a layer of ruthenium formed on said first layer of CoFe;  
a second layer of CoFe formed on said layer of ruthenium;  
a second layer of ferromagnetic material formed on said second layer of CoFe;  
a dielectric layer formed on said second layer of ferromagnetic material;  
wherein the layer of ruthenium if of thickness between 2.0 angstrom and 4.0  
angstrom.--

Claim 83 now read as follows:

--A magnetoresistive read head with laminated magnetic shields comprising:  
a first laminated magnetic shield;  
a magnetoresistive sensor element formed on said first laminated magnetic shield;  
a second laminated magnetic shield formed on said magnetoresistive sensor  
element;  
wherein the second laminated magnetic shield comprises:  
a substrate;  
a layer of Al<sub>2</sub>O<sub>3</sub> of thickness between 0.5 microns and 10.0 microns formed on  
said substrate;  
a first layer of ferromagnetic material formed on said layer of Al<sub>2</sub>O<sub>3</sub>;  
a layer of ruthenium formed on said first layer of ferromagnetic material;  
a second layer of ferromagnetic material formed on said layer of ruthenium;  
a dielectric layer formed on said second layer of ferromagnetic material;

wherein the layer of ruthenium if of thickness between 2.0 angstrom and 4.0 angstrom.--

Claim 95 now read as follows:

--A magnetoresistive read head with laminated magnetic shields comprising:  
a first laminated magnetic shield;  
a magnetoresistive sensor element formed on said first laminated magnetic shield;  
a second laminated magnetic shield formed on said magnetoresistive sensor element;

wherein the second laminated magnetic shield comprises:

a substrate;  
a first layer of ferromagnetic material formed on said substrate;  
a first layer of CoFe formed on said first layer of ferromagnetic material;  
a layer of ruthenium formed on said first layer of CoFe;  
a second layer of CoFe formed on said layer of ruthenium;  
a second layer of ferromagnetic material formed on said second layer of CoFe;  
a dielectric layer formed on said second layer of ferromagnetic material;  
wherein the layer of ruthenium if of thickness between 2.0 angstrom and 4.0 angstrom.--

Claims 1-6, 8-19, 21-31, 33-43, 45-50, 52-57, 59-69, 71-82, 84-94 and 96-101 are canceled in view of the July 19 2005 decision.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angel A. Castro whose telephone number is 571-272-7584. The examiner can normally be reached on Monday through Thursday, 8 AM to 6 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on 571-272-7579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
**ANGEL CASTRO**  
**PRIMARY EXAMINER**

Angel Castro, Ph.D.